

***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 4-11, 13-17, and 20-26 are pending in the application, with claims 1, 10, 17 and 23 being the independent claims. Claims 2-3, 12, and 18-19 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

***Rejections under 35 U.S.C. § 103***

Claims 1-3, 8, 14, 17-19, and 23 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Pat. Pub. No. 2003/007377 to Otaka (hereinafter "Otaka") in view of U.S. Pat. Pub. No. 2003/0176177 to Molnar *et al.* (hereinafter "Molnar"). Applicants respectfully traverse.

Claims 1, as amended, recites an RF mixer "wherein the LO signal is divided into a plurality of individual LO waveforms, and a phase difference between any two time-adjacent individual LO waveforms in the plurality of individual LO waveforms is approximately equal to a phase difference between any other two time-adjacent individual LO waveforms in the plurality of individual LO waveforms." Such an amendment incorporates the features of previous claims 2 and 3. The Examiner admits that Otaka does not specifically teach or suggest such a feature (see, Office Action, page

3). Instead, the Examiner attempts to combine Otaka with Molner to teach such a feature.

Applicants respectfully submit that such a combination cannot be made, as it would render Otaka unsuitable for its intended purpose. Otaka requires that the phases of the two LO signals used be directly opposite to each other (e.g., 0° and 90°). This is so harmonics in the output signal specifically cancel each other out. (*see*, Otaka, paras. 0031 and 0092). Molner does discuss phase-splitting the LO signals into four equal-size portions. Even if the additional LO signals of Molner having equal differences between phases could be added to the system of Otaka, such that there could be "other two time-adjacent waveforms," the phases of such signals would necessarily be equal to existing signals so that the phases of all the signals would still be directly opposite to each other. Further, if the phases of the LO signals in Otaka were altered so that more than two signals were separated by equal phase differences, the alteration would inhibit the ability of Otaka's system to effectively cancel out the harmonics.

Therefore, modifying Otaka with the teachings of Molner would render Otaka unsatisfactory for its intended purpose (*see*, M.P.E.P. § 2143.01(V) and (VI)), and cannot be used by the Examiner to form a prima facie case of obviousness. Reconsideration and withdrawal of the rejections of claim 1 is respectfully requested.

Independent claims 17 and 23 include a feature similar to that discussed with respect to claim 1. Applicants thus submit that claims 17 and 23 are patentable over Otaka in view of Molnar for at least the reasons discussed with respect to claim 1.

Claims 2-3 and 18-19 have been cancelled, as the subject matter therein has been incorporated into their respective independent claims. Applicants submit that the rejection of claims 2-3 and 18-19 is rendered moot.

Claim 8 depends indirectly from claim 1, and is thus patentable for at least the reasons discussed with respect to claim 1, and further in view of its own respective features.

Claim 14 depends from claim 10. Claim 10 was not rejected based on the combination of Otaka and Molner. It is therefore understood that claim 10 is considered patentable by the Examiner over the combination of Otaka and Molner. Claim 14 is thus patentable over the combination of Otaka and Molner for at least the same reasons as claim 10, and further in view of its own respective features.

Claims 4-7, 9-13, 15-16, 20-22, and 24-26 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Otaka in view of Molnar, and further in view of U.S. Pat. Pub. No. 2005/0206416 to Kizer (hereinafter "Kizer"). Applicants respectfully traverse.

Claims 4-7 and 9 depend directly or indirectly from claim 1. Claims 20-22 depend directly or indirectly from claim 17, and claims 24-26 depend directly from claim 23. Claims 4-7, 9, 20-22, and 24-26 are thus patentable over the combination of Otaka and Molnar for at least the reasons discussed with respect to claim 1, and further in view of their own respective features. The addition of Kizer does not cure this deficiency, as Kizer also does not teach or suggest a mixer wherein the LO signal is divided into a plurality of individual LO waveforms, and a phase difference between any two time-adjacent individual LO waveforms in the plurality of individual LO waveforms is

approximately equal to a phase difference between any other two time-adjacent individual LO waveforms in the plurality of individual LO waveforms. Reconsideration and withdrawal of the rejections of claims 4-7, 9, 20-22, and 24-26 are respectfully requested.

Claim 10 recites, among other things, a method of RF mixing wherein a phase difference between any two time-adjacent waveforms in the plurality of individual LO waveforms is approximately equal to a phase difference between any other two time-adjacent waveforms in the plurality of individual LO waveforms. As discussed above, the combination of Otaka and Molnar does not teach or suggest such a feature. The addition of Kizer does not cure that deficiency. Applicants thus submit that claim 10 is patentable over the combination of Otaka, Molnar, and Kizer. Reconsideration and withdrawal of the rejection of claim 10 is respectfully requested.

Claim 12 has been cancelled, as the subject matter contained therein has been incorporated into claim 10. The rejection of claim 12 is thus rendered moot.

Claims 11, 13, and 15-16 depend directly from claim 10 and are thus patentable for at least the reasons discussed with respect to claim 10, and further in view of their own respective features. Reconsideration and withdrawal of the rejections of claim 11, 13, and 15-16 are respectfully requested.

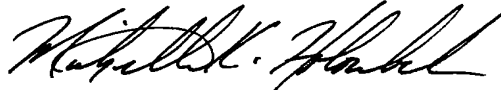
***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Michelle K. Holoubek  
Attorney for Applicants  
Registration No. 54,179

Date: April 30, 2007

1100 New York Avenue, N.W.  
Washington, D.C. 20005-3934  
(202) 371-2600

629822\_1.DOC